

**THE FINANCE-GROWTH-CRISIS NEXUS IN INDIA AND
SELECTED ASIAN COUNTRIES: CAUSALITY ANALYSIS
BASED ON SUMMARY INDICATORS**

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ABSTRAK

Kajian ini berkaitan pertumbuhan India dan pengalaman kewangannya selama tempoh 1982Q1~2007Q4, mengambil kira krisis kewangan dan represi kewangan ke dalam estimasi. Untuk tujuan ini, ringkasan penunjuk asal pembangunan kewangan, krisis kewangan dan represi kewangan dibentuk. Analisis kausalitas Granger dengan menggunakan kaedah VAR yang tak terbatas, VECM dan ARDL dilakukan. Penemuan utama adalah: (1) hubungan kausalitas kewangan-pertumbuhan bagi India adalah dua arah, tetapi lebih cenderung ke arah pertumbuhan \rightarrow kewangan; (2) represi kewangan sangat penting bagi pertumbuhan ekonomi dan perkembangan kewangan tanpa mengira rentang waktu, dan (3) pertumbuhan ekonomi, pembangunan kewangan dan represi kewangan secara signifikan mempengaruhi krisis kewangan. Kajian diperluaskan ke atas empat negara Asia Indonesia, Korea, Malaysia dan Thailand, yang terkesan teruk dari krisis Asia selama tempoh 1997-1998. Bagi setiap negara, kami memperoleh estimasi yang signifikan tetapi arah hubungan pertumbuhan-kewangan bergantung kepada negara tertentu, pembangunan kewangan adalah disebabkan krisis kewangan (kecuali Korea di mana pertumbuhan disebabkan krisis).

ABSTRACT

In this paper, we first examine India's finance-growth-crisis nexus over the period of 1982Q1~2007Q4, taking the elements of financial crisis and financial repression into estimation. For this end, we create the original summary indicators of financial development, financial crisis and financial repression, respectively, and conduct Granger causality analysis employing those methods of unrestricted VAR, VECM and ARDL. Our main findings are: (1) India's finance-growth causality is bidirectional, more inclining toward the causation of growth→finance; (2) financial repression is crucial for both economic growth and financial development irrespective of time spans; and (3) economic growth, financial development and financial repression significantly influence financial crisis. Subsequently, our "Indian approach" is extended to four Asian countries of Indonesia, Korea, Malaysia and Thailand, all of which were severely hit by the Asian financial crisis over the period of 1997-1998. For each country, we obtain significant estimates and confirm that while the directions of finance-growth nexus are country-specific, financial development crucially causes financial crisis (except Korea where growth causes crisis).

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TABLE OF CONTENTS

PERMISSION TO USE.....	i
ABSTRAK	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES	xi
LIST OF FIGURES	xiv
LIST OF ABBREVIATION	xv
 CHAPTER ONE: INTRODUCTION	 1
1.1 Backgrounds	1
1.2 Problem Statement.....	3
1.3 Objectives	5
1.4 Significance of Research	7
1.5 Outline and Data Sources	8
 CHAPTER TWO: LITERATURE REVIEW	 11
2.1 McKinnon-Shaw Hypothesis.....	11
2.1.1 Overview	11
2.1.2 Theoretical Explanation of McKinnon-Shaw Hypothesis	13
2.1.3 Comments on McKinnon-Shaw Hypothesis.....	16
2.2 Finance-Growth Nexus Debate	17
2.3 Stock Market Development.....	23
2.4 Measurement of Financial Development.....	25
2.4.1 Proxies for Banking Sector Development.....	25
2.4.2 Proxies for Stock Market Development.....	28

2.5 Financial Crisis.....	30
2.5.1 Overview.....	30
2.5.2 Distinction of Financial Crises.....	32
2.5.3 Measurement of Financial Crisis	36
2.5.4 Proxies for Currency Crisis.....	38
2.5.5 Proxies for Banking Crisis	39
2.6 Financial Repression.....	40
2.6.1 Forward	40
2.6.2 Measurement of Financial Repression	41
2.7 India's Growth- and Financial Profiles	43
2.7.1 India's Economic Growth Profile	44
2.7.2 India's Financial Profile.....	47
2.7.3 India's Stock Market Development	52
2.8 Selected Asian Countries' Growth- and Financial Profiles.....	53
2.8.1 East Asian Miracle	53
2.8.2 Asian Financial Crisis	55
CHAPTER THREE: DATA AND METHODOLOGY	57
3.1 Disaggregation Procedure for GDP Series	57
3.2 Financial Development Indicator	61
3.2.1 Selection of Financial Development Variables.....	61
3.2.2 Two Standards for Conducting Principal Component Analysis	63
3.2.3 FD Results of Principal Component Analysis	64
3.3 Financial Crisis Indicator.....	66
3.3.1 Selection of Financial Crisis Variables.....	66
3.3.2 Measurement of Volatility	70
3.3.3 FC Results of Principal Component Analysis.....	71
3.4 Financial Repression Indicator	74
3.4.1 Selection of Financial Repression Variables	74
3.4.2 Measurement of Interest Rate Controls	76
3.4.3 Measurement of Other Financial Repression Variables.....	78
3.4.4 FR Results of Principal Component Analysis.....	79

3.5 Methodology	81
3.5.1 Basic Models	81
3.5.2 Unrestricted VAR Procedures	83
3.5.3 VECM Procedures	85
3.5.4 ARDL Procedures	88
3.5.5 SGD (SFD or SCD) and PCD	91
3.5.6 SBGD	91
3.5.7 BP Test Results	95
 CHAPTER FOUR: EMPIRICAL RESULTS	98
4.1 Unit Root- and Cointegration Test Results	98
4.2 India's Empirical Results	100
4.2.1 EG-VAR Results	100
4.2.2 FD-VAR Results	101
4.2.3 FC-VAR Results	102
4.2.4 EG-VECM Results	103
4.2.5 FD-VECM Results	104
4.2.6 VECM Finance-Growth Nexus Result	106
4.2.7 FC-VECM Results	106
4.2.8 Innovation Accounting Analysis	107
4.2.9 ARDL Bounds Test Results	110
4.2.10 FD-ARDL Results	111
4.2.11 FD-ARDL-ECM Results	112
4.2.12 FC-ARDL Results	114
4.2.13 FC-ARDL-ECM Results	115
4.3 Indonesia's Empirical Results	117
4.3.1 EG-VAR Results	117
4.3.2 FD-VAR Results	118
4.3.3 FC-VAR Results	119
4.3.4 EG-VECM Results	120
4.3.5 FD-VECM Results	121
4.3.6 VECM Finance-Growth Nexus Result	123
4.3.7 FC-VECM Results	123
4.3.8 Innovation Accounting Analysis	124

4.3.9 ARDL Bounds Test Results	126
4.3.10 FC-ARDL Results	126
4.3.10 FC-ARDL-ECM Results	127
4.4 Korea's Empirical Results	129
4.4.1 EG-VAR Results	129
4.4.2 FD-VAR Results	130
4.4.3 FC-VAR Results	131
4.4.4 EG-VECM Results	132
4.4.5 FD-VECM Results	133
4.4.6 VECM Finance-Growth Nexus Result	134
4.4.7 FC-VECM Results	134
4.4.8 Innovation Accounting Analysis	136
4.4.9 ARDL Bounds Test Results	137
4.4.9 EG-ARDL Results	137
4.4.10 EG-ARDL-ECM Results	138
4.4.11 FD-ARDL Results	139
4.4.12 FD-ARDL-ECM Results	140
4.4.13 FC-ARDL Results	141
4.4.14 FC-ARDL-ECM Results	142
4.5 Malaysia's Empirical Results	143
4.5.1 EG-VAR Results	143
4.5.2 FD-VAR Results	144
4.5.3 FC-VAR Results	145
4.5.4 EG-VECM Results	146
4.5.5 FD-VECM Results	147
4.5.6 VECM Finance-Growth Nexus Result	148
4.5.7 FC-VECM Results	148
4.5.8 Innovation Accounting Analysis	149
4.5.9 ARDL Bounds Test Results	150
4.5.10 FD-ARDL Results	151
4.5.11 FD-ARDL-ECM Results	152
4.5.12 FC-ARDL Results	153
4.5.13 FC-ARDL-ECM Results	154

4.6 Thailand's Empirical Results.....	155
4.6.1 EG-VAR Results.....	155
4.6.2 FD-VAR Results.....	156
4.6.3 FC-VAR Results.....	157
4.6.4 EG-VECM Results.....	158
4.6.5 FD-VECM Results.....	159
4.6.6 VECM Finance-Growth Nexus Result.....	160
4.6.7 FC-VECM Results.....	160
4.6.8 Innovation Accounting Analysis.....	162
4.6.8 ARDL Bounds Test Results.....	163
4.6.9 FC-ARDL Results.....	163
4.6.10 FC-ARDL-ECM Results.....	164
 CHAPTER FIVE: DISCUSSION AND POLICY IMPLICATION.....	 166
5.1 Discussion on India's Empirical Results.....	166
5.1.1 Time Series Evidence on India's Finance-Growth Nexus.....	166
5.1.2 Highlights of India's Empirical Results.....	169
5.1.3 India's Finance-Growth Nexus.....	170
5.1.4 India's Financial Repression.....	172
5.1.5 India's Finance-Growth-Crisis Nexus.....	174
5.2 International Comparison.....	178
5.2.1 Finance-Growth Nexus.....	178
5.2.2 Financial Repression.....	181
5.2.3 Finance-Growth-Crisis Nexus.....	183
 CONCLUDING REMARKS	 188
 TABLES.....	 190
 FIGURES.....	 255
 REFERENCES.....	 272

APPENDIXES	282
Appendix 1 List of Financial Development Variables	282
Appendix 2 List of Financial Crisis Variables	283
Appendix 3 List of Financial Repression Variables	285
Appendix 4 Indonesia's Principal Component Analysis Results	286
(a) FD Results (1980Q1~2007Q4)	286
(b) FC Results (1981Q1~2007Q4)	287
(c) FR Results (1981Q1~2007Q4)	289
Appendix 5 Korea's Principal Component Analysis Results	291
(a) FD Results (1980Q1~2007Q4)	291
(b) FC Results (1981Q1~2007Q4)	292
(c) FR Results (1981Q1~2007Q4)	294
Appendix 6 Malaysia's Principal Component Analysis Results	296
(a) FD Results (1978Q1~2007Q4)	296
(b) FC Results (1981Q1~2007Q4)	297
(c) FR Results (1980Q1~2007Q4)	299
Appendix 7 Thailand's Principal Component Analysis Results	301
(a) FD Results (1977Q1~2007Q4)	301
(b) FC Results (1985Q1~2007Q4)	302
(c) FR Results (1977Q1~2007Q4)	304
Appendix 8 Datasets of Sample Countries	306
(a) India	306
(b) Indonesia	310
(c) Korea	314
(d) Malaysia	318
(e) Thailand	322

LIST OF TABLES

Table 2.1 Currency Crisis Indicators	190
Table 2.2 Banking Crisis Indicators	192
Table 3.1 India's FD Results of Principal Component Analysis	193
Table 3.2 India's FC Results of Principal Component Analysis.....	194
Table 3.3 Asian Countries' Selected Financial Crisis Variables	196
Table 3.4 India's FR Results of the Principal Component Analysis.....	196
Table 3.5 Lag Order Selection Results for India's BP Test	197
Table 3.6 India's BP Test Results	198
Table 3.7 Selected Asian Countries' BP Tests Results	198
Table 3.8 Dummy Variables Included and Sample Periods.....	198
Table 4.1 Unit Root Test Results	199
Table 4.2 Lag Order Selection Test Results.....	201
Table 4.3 Johansen Cointegration Test Results	203
Table 4.4 India's EG-VAR Test Statistics	204
Table 4.5 India's FD-VAR Test Statistics	204
Table 4.6 India's FC-VAR Test Statistics	205
Table 4.7 India's EG-VECM Test Statistics	206
Table 4.8 India's FD-VECM Test Statistics	207
Table 4.9 India's VECM Finance-Growth Nexus Results.....	208
Table 4.10 India's FC-VECM Test Statistics.....	209
Table 4.11 India's Generalized Forecast Error Variances	210
Table 4.12 India's Bounds Test Results	211
Table 4.13 India's FD-ARDL Test Statistics	211
Table 4.14 India's FD-ARDL-ECM Causality Test Results.....	212
Table 4.15 India's FC-ARDL Test Statistics	212
Table 4.16 India's FC-ARDL-ECM Causality Test Results	213
Table 4.17 Indonesia's EG-VAR Test Statistics.....	214
Table 4.18 Indonesia's FD-VAR Test Statistics.....	214
Table 4.19 Indonesia's FC-VAR Test Statistics	215
Table 4.20 Indonesia's EG-VECM Test Statistics	216
Table 4.21 Indonesia's FD-VECM Test Statistics	217
Table 4.22 Indonesia's VECM Finance-Growth Nexus Results	217
Table 4.23 Indonesia's FC-VECM Test Statistics	218
Table 4.24 Indonesia's Generalized Forecast Error Variances	219

Table 4.25	Indonesia's Bounds Test Results.....	220
Table 4.26	Indonesia's FC-ARDL Test Statistics	220
Table 4.27	Indonesia's FC-ARDL-ECM Causality Test Results.....	221
Table 4.28	Korea's EG-VAR Test Statistics	222
Table 4.29	Korea's FD-VAR Test Statistics.....	222
Table 4.30	Korea's FC-VAR Test Statistics.....	223
Table 4.31	Korea's EG-VECM Test Statistics.....	224
Table 4.32	Korea's FD-VECM Test Statistics	225
Table 4.33	Korea's VECM Finance-Growth Nexus Results	225
Table 4.34	Korea's FC-VECM Test Statistics	226
Table 4.35	Korea's Generalized Forecast Error Variances	227
Table 4.36	Korea's Bounds Test Results	228
Table 4.37	Korea's EG-ARDL Test Statistics	228
Table 4.38	Korea's EG-ARDL-ECM Causality Test Results	228
Table 4.39	Korea's FD-ARDL Test Statistics.....	229
Table 4.40	Korea's FD-ARDL-ECM Causality Test Results	229
Table 4.41	Korea's FC-ARDL Test Statistics	230
Table 4.42	Korea's FC-ARDL-ECM Causality Test Results	230
Table 4.43	Malaysia's EG-VAR Test Statistics	231
Table 4.44	Malaysia's FD-VAR Test Statistics.....	231
Table 4.45	Malaysia's FC-VAR Test Statistics.....	232
Table 4.46	Malaysia's EG-VECM Test Statistics.....	233
Table 4.47	Malaysia's FD-VECM Test Statistics	234
Table 4.48	Malaysia's VECM Finance-Growth Nexus Results	235
Table 4.49	Malaysia's FC-VECM Test Statistics	236
Table 4.50	Malaysia's Generalized Forecast Error Variances	237
Table 4.51	Malaysia's Bounds Test Results	238
Table 4.52	Malaysia's FD-ARDL Test Statistics.....	238
Table 4.53	Malaysia's FD-ARDL-ECM Causality Test Results	238
Table 4.54	Malaysia's FC-ARDL Test Statistics	239
Table 4.55	Malaysia's FC-ARDL-ECM Causality Test Results	239
Table 4.56	Thailand's EG-VAR Test Statistics.....	240
Table 4.57	Thailand's FD-VAR Test Statistics	240
Table 4.58	Thailand's FC-VAR Test Statistics	241
Table 4.59	Thailand's EG-VECM Test Statistics	241
Table 4.60	Thailand's FD-VECM Test Statistics	242

Table 4.61 Thailand's VECM Finance-Growth Nexus Results.....	242
Table 4.62 Thailand's FC-VECM Test Statistics.....	243
Table 4.63 Thailand's Generalized Forecast Error Variances.....	244
Table 4.64 Thailand's Bounds Test Results	245
Table 4.65 Thailand's FC-ARDL Test Statistics.....	245
Table 4.66 Thailand's FC-ARDL-ECM Causality Test Results	246
Table 5.1 Time Series Evidence on India's Finance-Growth Nexus	247
Table 5.2 Summary of India's Empirical Findings.....	248
Table 5.3 India's Finance-Growth Nexus	249
Table 5.4 India's Financial Repression.....	249
Table 5.5 India's Finance-Growth-Crisis Nexus	250
Table 5.6 Sample Countries' Finance-Growth Nexus (1).....	251
Table 5.7 Sample Countries' Finance-Growth Nexus (2).....	251
Table 5.8 Time Series Evidence on Selected Asian Countries' F-G Nexus	252
Table 5.9 Sample Countries' Financial Repression	253
Table 5.10 Financial Crisis as the Independent Variable.....	254
Table 5.11 Financial Crisis as the Dependent Variable	254

LIST OF FIGURES

Figure 2.1 Impact of interest rate ceiling on savings and investment	255
Figure 2.2 India's Real Per Capita GDP (RPGDP) Growth Rate	255
Figure 2.3 India's External- and Internal Imbalances	256
Figure 2.4 India's Ratio of Commercial Bank Assets to GDP (BATG)	257
Figure 2.5 India's SKTG and SVTG	257
Figure 3.1 India's Quarterly Nominal GDP Series	258
Figure 3.2 India's Quarterly EG Series	259
Figure 3.3 Selected Asian Countries' EG Series	260
Figure 3.4 India and Selected Asian Countries' FD Series	261
Figure 3.5 India and Selected Asian Countries' FC Series	263
Figure 3.6 India and Selected Asian Countries' FR Series	265
Figure 3.7 India's SBGD (One Break)	266
Figure 4.1 India's Generalized Impulse Responses	267
Figure 4.2 Indonesia's Generalized Impulse Responses	268
Figure 4.3 Korea's Generalized Impulse Responses	269
Figure 4.4 Malaysia's Generalized Impulse Responses	270
Figure 4.5 Thailand's Generalized Impulse Responses	271

LIST OF ABBREVIATION

AIC	Akaike Information Criteria
ARDL	Autoregressive Distributed Lag
ARDL-ECM	Autoregressive Distributed Lag Error Correction Model
BA	Deposit Money Bank Assets
BATG	Deposit Money Bank Assets/GDP
BP Test	Bai and Perron Test
CRTD	Commercial Bank Reserve/Total Deposit
CRTG	Commercial Bank Reserve/GDP
CRTM	Commercial Bank Reserve/Money Supply
ECM	Error Correction Model
ECT	Error Correction Term
ED	External Debt
EG	Economic Growth Indicator
ER	Exchange rate
FC	Financial Crisis Indicator
FCD	Fiscal Deficit
FD	Financial Development Indicator
FR	Financial Repression Indicator
FSD	Financial Structure Dataset
GCE	Government Consumption Expenditure
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
GTD	Claims on the Government/Total Domestic Credit
GTG	Claims on the Government/GDP
GTM	Claims on the Government/Money Supply
IFS	International Financial Statistics
IR	Inflation Rate
IT	Inflation Tax
KMO	Kaiser-Meyer-Olkin
MS	Money Supply
MSA	Measure of Sampling Adequacy
MTF	Money Supply / Foreign Exchange Reserve
MTG	Money Supply/GDP
NR	Nominal Interest Rate

NSE	National Stock Exchange
OP	Oil Price
OTCEI	Over the Counter Exchange of India
PC	Private Credit by Deposit Money Banks
PCFC	Principal Component for Financial Crisis
PCFD	Principal Component for Financial Development
PCFR	Principal Component for Financial Repression
PCTG	Private Credit by Deposit Money Banks/GDP
PCD	Pre-Crisis Dummy
RBI	Reserve Bank of India
RR	Real Interest Rate
SBC	Schwarz Bayesian Criterion
SBGD	Structural Break in Economic Growth Dummy
SEBI	Securities and Exchange Board of India
SGD	Shock in Economic Growth Dummy
SFCD	Shock in Financial Crisis Dummy
SFD	Shock in Financial Development Dummy
SKTG	Stock Market Capitalization/GDP
SKTGV	Stock Market Capitalization/GDP (Volatility)
SP	Share Price
SVTG	Stock Market Total Value /GDP
SVTGV	Stock Market Total Value /GDP (Volatility)
TD	Total Deposit
TV	Trade Volume
VAR	Vector Autoregression
VECM	Vector Error Correction Model
WDI	World Development Indicators
ZA Test	Zivot and Andrew Test

CHAPTER ONE

INTRODUCTION

1.1 Backgrounds

Since the financial liberalization literature was pioneered by McKinnon (1973) and Shaw (1973) and the endogenous growth literature (e.g., Greenwood and Jovanovic 1990; Bencivenga, and Smith, 1991) emphasized the role of financial intermediaries in economic growth, it has been a general concept in development economics that “finance does matter growth.” This argument means that a well-designed financial system and/or the supply of more sophisticated financial services can best meet the needs of developing countries for accelerating economic growth, or that the high degree of banking development and/or stock market development has a positive impact on economic growth.

Inspired by those theoretical achievements, a number of empirical studies of finance-growth nexus have been conducted. However, especially in the multi-country framework, there has been a methodological controversy between cross-country (section) studies and time series ones.¹ A pioneering cross-country

¹ There have been several empirical studies that question the linear specification and suggest the nonlinearity of

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REFERENCES

- Abad, A. and Quilis, E.M. (2005). Software to perform temporal disaggregation of economic time series, *Working Papers and Studies*. Luxembourg, Office for Official Publications of the European Communities.
- Agrawal, P. (2000). *Savings, Investment and Growth in South Asia*. Indira Gandhi Institute of Development Research, Bombay.
- Ahluwalia, M.S. (1999). Reforming India's financial sector: An overview, in Hanson, J. A. and Kathuria, S. (eds), *India: A Financial Sector for the Twenty-first Century*. New Delhi, Oxford University Press.
- Andreou, E. and Savvides, A. (2005). Identifying the date and effects of liberalization in the financial markets of emerging economies. *Paper Presented at the Conference Emerging Markets Finance, London*.
- Ang, J.B. (2008). A survey of recent developments in the literature of finance and growth. *Journal of Economic Surveys* 22, 536–576.
- Ang, J.B. and McKibbin, W.J. (2007). Financial liberalization, financial sector development and growth: Evidence from Malaysia. *Journal of Development Economics* 84, 215-233.
- Ansari, M.I. (2002). Impact of financial development, money, and public spending on Malaysian national income: An econometric study. *Journal of Asian Economics* 13, 72-93.
- Appouonline.com (2009). *Stock Market of India*. Retrieved from <http://www.appouonline.com/appu/investment/about.html>
- Arestis, P. and Demetriades, P. (1997). Financial development and economic growth: Assessing the evidence. *Economic Journal* 107, 783–799.
- Arestis, P. and Demetriades, P. (1999). Financial liberalization: The experience of developing countries. *Eastern Economic Journal* 25, 441-457.
- Arestis, P., Demetriades, P., Fattouh, B. and Mouratidis, K. (2002). The impact of financial liberalization on financial development: Evidence from developing economies. *International Journal of Finance & Economics* 7, 109-121.
- Arestis, P., Demetriades, P., and Luintel, K.B. (2001). Financial development and economic growth: The role of stock markets. *Journal of Money, Credit, and Banking* 33, 16-41.

- Arun, T.G. and Turner, J.D. (2003). Financial sector reforms in developing countries: The Indian experience. *The World Economy*, 25, 429-445.
- Asimakopulos, A. (1986). Finance, liquidity, saving, and investment. *Journal of Post Keynesian Economics* 9, 79-90.
- Bai, J. and Perron, P. (1998). Estimating and testing linear models with multiple structural changes. *Econometrica* 66, 47-78.
- Bai, J. and Perron, P. (2003). Computation and analysis of multiple structural change models. *Journal of Applied Econometrics* 18, 1-22.
- Barro, R.J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics* 56, 407-443.
- Beck, T. (2008). The econometrics of finance and growth. *Policy Research Working Paper 4608*, World Bank.
- Beck, T., Demirgüç-Kunt, A., and Levine, R. (1999). A new database on financial development and structure. *Policy Research Working Paper 2146*, World Bank.
- Beck, T., Levine, R. (2002). Industry growth and capital accumulation: Does having a market- or bank-based system matter? *Journal of Financial Economics* 64, 147-180.
- Beck, T. and Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance* 28, 423-442.
- Beck, T., Levine, R. and Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics* 58, 261-300.
- Bekaert, G., Harvey, C.R. and Lundblad, C. (2001). Emerging equity market and economic development. *Journal of Development Economics* 66, 465-504.
- Bell, C. and Rousseau, P.L. (2001). Post-independence India: A case of finance-led industrialization? *Journal of Development Economics* 65, 153-175.
- Bencivenga, V. and Smith, B.D. (1991). Financial intermediation and endogenous growth. *Review of Economic Studies* 58, 195-209.
- Bencivenga, V. and Smith, B.D. (1992). Deficits, inflation, and the banking system in developing countries: The optimal degree of financial repression. *Oxford Economic Papers* 44, 767-790.
- Berg, A., Borensztein, E., Milesi-Ferretti, G. M. and Pattillo, C. (2000). Anticipating balance of payments crises: The role of early warning systems. *IMF Occasional Paper* 186.

- Berg, A., Borensztein E. and Pattillo, C. (2005). Assessing early warning systems: How have they worked in practice? *IMF Staff Papers* 52.
- Berg, V. and Pattillo, C. (1999). Predicting currency crises: The indicators approach and an alternative. *Journal of International Money and Finance* 18, 561–86.
- Bhattacharya, P.C. and Sivasubramanian, M.N. (2003). Financial development and economic growth in India: 1970-1971 to 1998-1999. *Applied Financial Economics* 13, 925-929.
- Boot, J.C.G., Feibes, W., Lisman, J.H.C. (1967). Further methods of derivation of quarterly figures from annual data. *Applied Statistics* 16, 65–75.
- Borio, C. and Lowe, P. (2001). Asset prices, financial and monetary stability: Exploring the nexus. *BIS Working Papers* 114, Bank for International Settlements.
- Caprio, G. (1998). Banking on crises: Expensive lessons from recent financial crises. *Policy Research Working Paper* 1976, World Bank.
- Caprio, G. and Klingebiel, D. (1996). Bank insolvencies: Cross-country experience. *Policy Research Working Paper* 1620, World Bank.
- Cerra, V. and Saxena, S.C. (2002). What caused the 1991 currency crisis in India? *IMF Staff Papers* 49, 395-425.
- Chan, W.S. (1993). Disaggregation of annual time-series data into quarterly figures: A comparative study. *Journal of Forecasting* 12, 677-688.
- Charemza, W.W. and Deadman, D.F. (1997). *New Directions in Econometric Practice*, Cheltenham, Edward Elgar.
- Cho, Y.J. (1986). Inefficiencies from financial liberalization in the absence of well-functioning equity markets. *Journal of Money, Credit and Banking* 18, 191-199.
- Chow, G. and Lin, A. (1971). Best linear unbiased interpolation, distribution, and extrapolation of time series by related series. *Review of Economics and Statistics* 53, 372-375.
- Christopoulos, D.K. and Tsionas, E.G. (2004). Financial development and economic growth: Evidence from panel unit root and cointegration tests. *Journal of Development Economics* 73, 55-74.
- Crotty, J. (2009). Structural causes of the global financial crisis: A critical assessment of the ‘new financial architecture’. *Cambridge Journal of Economics* 33, 563–580

- Dahalan, J. and Jayaraman, T.K. (2006). Monetary and fiscal policies in Fiji: A test of effectiveness. *Pacific Economic Bulletin*, 21, 94-102.
- Dahalan, J., Sharma, S.C. and Sylwester, K. (2005). Divisia monetary aggregates and money demand for Malaysia. *Journal of Asian Economics* 15, 1137-1153.
- De Gregorio, J. and Guidotti, P. (1995). Financial development and economic growth. *World Development* 23, 433-448.
- Deidda, L. and Fattouh, B. (2002). Non-linearity between finance and growth. *Economics Letters*, 74, 339-345.
- Demetriades, P.O. and Hussein, K.A. (1996). Does financial development cause economic growth?: Time-series evidence from 16 countries. *Journal of Development Economics* 51, 387-411.
- Demetriades, P.O. and Luintel, K.B. (1996). Financial development, economic growth and banking sector controls: Evidence from India. *Economic Journal* 106, 359-374.
- Demetriades, P.O. and Luintel, K.B. (1997). The direct costs of financial repression: Evidence from India. *Review of Economics & Statistics* 97, 311-320.
- Demetriades, P.O. and Luintel, K.B. (2001). Financial restraints in the South Korean miracle. *Journal of Development Economics* 64, 459-479.
- Demirgüç-Kunt, A. and Detragiache, E. (1998). Financial liberalization and financial fragility. *IMF Working Paper*.
- Demirgüç-Kunt, A. and Detragiache, E. (2005). Cross-country empirical studies of systemic bank distress: A survey. *World Bank Policy Research Working Paper*.
- Demirgüç-Kunt, A. and Maksimovic, V. (2002). Funding growth in bank-based and market-based financial systems: Evidence from firm-level data. *Journal of Financial Economics* 65, 337-363.
- Dutt, A.K. (1990). Interest rate policy in LDCs: A post Keynesian view. *Journal of Post Keynesian Economics* 13, 210-232.
- Edison, H.J. (2003). Do indicators of financial crises work?: An evolution of an early warning system. *International Journal of Finance and Economics* 8, 11-53.
- Eichengreen, B. and Arteta, C. (2002). Banking crises in emerging markets: Presumptions and evidence, in Blejer, M. and Skreb, M.(eds.), *Financial Policies in Emerging Markets*. Cambridge, MA, MIT Press.

- Fase, M.M.G. and Abma, R.C.N. (2003). Financial environment and economic growth in selected Asian Countries. *Journal of Asian Economics* 14, 11–21.
- Feijoó, S.R., Caro, A.R., and Quintana, D.D. (2003). Methods for quarterly disaggregation without indicators: A comparative study using simulation. *Computational Statistics & Data Analysis* 43, 63–78.
- Friedman, M. and Schwartz, A.J. (1963). *A Monetary History of the United States*. Princeton University Press.
- Fry, M.J. (1995). *Money, Interest, and Banking in Economic Development, Second Edition*. Baltimore, John Hopkins University Press
- Fry, M.J. (1997). In favor of financial liberalization. *Economic Journal* 107, 754-770.
- Fry, M.J. (1998). Saving, investment, growth, and financial distortions in Pacific Asia and other developing areas. *International Economic Journal* 12, 1-24.
- Gelb, A.H. (1989). Financial policies, growth, and efficiency. *Policy, Planning, and Research Working Papers*. The World Bank.
- Gibson, H.D., and Tsakalotos, E. (1994). The scope and limits of financial liberalization in developing countries: A critical survey. *Journal of Development Studies*, 30, 578-628.
- Goldsmith, R.W. (1969). *Financial Structure and Development*. New Haven, CN, Yale University Press.
- Goldstein, M., Kaminsky, G. L. and Reinhart, C. M. (2000). *Assessing Financial Vulnerability: An Early Warning System for Emerging Markets*. Washington, D. C., Institute for International Economics.
- Greenwood, J. and Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy* 98, 1076-1107.
- Gujarati, D.N. (2003). *Basic Econometrics Forth Edition*. New Delhi, Tata McGraw-Hill.
- International Monetary Fund (IMF) (1998). Chapter IV Financial Crises: Characteristics and indicators of vulnerability, in *World Economic Outlook*, May.
- Hanson, J.A. and Kathuria, S. (1999). India's financial system: Getting ready for the twenty-first century: An introduction, in Hanson, J. A. and Kathuria, S. (eds), *India A Financial Sector for the Twenty-first Century*. New Delhi, Oxford University Press.

- Hardy, D.C. and Pazarbaşıoglu, C. (1999). Determinants and leading indicators of banking crises: Further evidence. *IMF Staff Papers* 46, 247-258.
- Haslag, J. H. and Koo, J. (1999). Financial repression, financial development and economic growth. *Research Department Working Paper* 9902, Federal Reserve Bank of Dallas.
- Hemming, R., Kell, M. and Schimmelpfennig, A. (2003). Fiscal vulnerability and financial crises in emerging market economies. *IMF Occasional Paper* 218.
- Huang, H. and Lin, S. (2009). Non-linear finance-growth nexus: A threshold with instrumental variable approach. *Economics of Transition* 17, 439-466.
- Jayaraman, T.K. and Dahalan, J. (2008). Monetary policy transmission in an undeveloped South Pacific island country: A case study of Samoa. *International Journal of Monetary Economics and Finance* 1, 371-389.
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control* 12, 231-254.
- Johansen, S. and Juselius, K. (1990). Maximum likelihood estimation interference on cointegration: With applications to the demand for money. *Oxford Bulletin of Economics and Statistics* 52, 169-210.
- Jones, B.F. and Olken, B.A. (2008). The anatomy of start-stop growth. *Review of Economics and Statistics* 90, 582-587.
- Joshi, V. (1998). India's economic reforms: Progress, problems and prospects. *Oxford Development Studies*, 26, 333-350.
- Joshi, V. and Little, I.M.D. (1996). *India's Economic Reforms 1991-2001*. New Delhi, Oxford University Press.
- Kaminsky, G.L., Lizondo, S. and Reinhart, C.M. (1998). Leading indicators of currency crises. *IMF Staff Papers* 45, 1-48.
- Kaminsky, G.L. and Reinhart, C.M. (1999). The twin crises: The causes of banking and balance-of-payments problems. *American Economic Review* 89, 473-500.
- Kaminsky, G.L. and Schmukler, S.L. (2003). Short-run pain, long-run gain: The effects of financial liberalization. *IMF Working Paper*.
- Kassimatis, K. and Spyrou, S.I. (2001). Stock and credit market expansion and economic development in emerging markets: Further evidence utilizing cointegration analysis. *Applied Economics* 33, 1057-1064.

- King, R.G. and Levine, R. (1993a): Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics* 108, 717-737.
- King, R.G. and Levine, R. (1993b). Finance, entrepreneurship, and growth: Theory and evidence. *Journal of Monetary Economics* 32, 513-542.
- Kletzer, K. and Kohli, R. (2001). Financial repression and exchange rate management in developing countries: Theory and empirical evidence for India. *IMF Working Paper*.
- Kumar, M., Moorthy, U. and Perraudin, W. (2003). Predicting emerging market currency crashes. *Journal of Empirical Finance* 10, 427– 454.
- Lane, T., Ghosh, A., Hamann, J., Phillips, S., Schulze-Ghattas, M. and Tsikata, T. (1999). IMF-supported programs in Indonesia, Korea, and Thailand: A preliminary assessment. *Occasional Paper 178*, International Monetary Fund, Washington DC.
- Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature* 35, 688-726.
- Levine, R. (1999). Law, finance, and economic growth. *Journal of Financial Intermediation* 8, 8–35.
- Levine, R. (2002). Bank-based or market-based financial systems: Which is better? *Journal of Financial Intermediation* 11, 398–428.
- Levine, R. (2004). Finance and growth: Theory and evidence. *NBER Working Paper* No. 10766.
- Levine, R., Loayza, N. and Beck, T. (2000). Financial intermediation and growth: causality and causes. *Journal of Monetary Economics* 46, 31-77.
- Levine, R. and Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, 88, 537-558.
- Loayza, N.V. and Rancière, R. (2006). Financial development, financial fragility, and growth. *Journal of Money, Credit, and Banking*, 38, 1051-1076.
- Long, M. and Vistas, D. (1993). Financial regulation: Changing the rules of the game. *Policy Research Working Papers*, the World Bank.
- Lucas, R.E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22, 3-42.
- Luintel, K.B. and Khan, M. (1999). A quantitative reassessment of the finance-growth nexus: Evidence from a multivariate VAR. *Journal of Development Economics* 60, 381-405.

- Luintel, K.B., Khan, M., Arestis, P. and Theodoridis, K. (2008). Financial structure and economic growth. *Journal of Development Economics* 86, 181–200
- McKinnon, R. (1973). *Money and Capital in Economic Development*. Washington, DC, Brookings Institution.
- McKinnon, R. (1993). *The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy, Second Edition*. Baltimore and London, Johns Hopkins University Press.
- Mohan, R. (2007). India's financial sector reforms: Fostering growth while containing risk. *RBI Monthly Bulletin December*, 2199-2226.
- Nayyar, D. (1996). *Economic Liberalization in India: Analytics, Experience and Lessons*. Calcutta, Orient Longman.
- Nguyen, D. (2008). An empirical analysis of structural changes in emerging market volatility. *Economics Bulletin* 6, 1-10.
- Noy, I. (2004). Financial liberalization, prudential supervision, and the onset of banking crises. *Emerging Markets Review* 5, 341–359.
- Panagariya, A. (2004). Growth and reforms during 1980s and 1990s. *Economic and Political Weekly, June 19*, 2581-94.
- Perron, P. (1989). The great crash, the oil price shock, and the unit root hypothesis. *Econometrica* 57, 1361-1401.
- Perron, P. (2007). Dealing with structural breaks, in Patterson, K. and Mills, T. C. (ed.), *Palgrave Handbook of Econometrics Volume 1: Econometric Theory*. Palgrave Macmillan.
- Perron, P. and Vogelsang, T.J. (1992). Nonstationarity and level shifts with an application to purchasing power parity. *Journal of Business and Economic Statistics*, 10, 301-320.
- Pesaran, M.H. and Pesaran, B. (1997). *Working with Microfit 4: Interactive Econometric Analysis*. Oxford, Oxford University Press.
- Pesaran, M.H. and Shin, Y. (1998). An autoregressive distributed lag modeling approach to cointegration analysis, in Strom, S. (ed.), *Econometrics and Economic Theory in the Twentieth Century: the Ragnar Frisch Centennial Symposium*, Cambridge University Press, Cambridge.
- Pesaran, M.H., Shin, Y. and Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics* 16, 289-326.

- Phillips, P.C.B. and Perron, P. (1988). Testing for unit root in time series regression. *Biometrika* 75, 335-346.
- Quah, D. (1993). Empirical cross section dynamics in economic growth. *European Economic Review* 37, 426-434.
- Ram, R. (1999). Financial development and economic growth. *Journal of Development Studies*, 35, 164-174.
- Reddy, Y.V. (2002). Dimensions of financial development, market reforms, and integration: The Indian experience, in Ahluwalia, M.S., Reddy, Y.V. and Tarapore, S.S. (eds), *Macroeconomics and Monetary Policy: Issues for a Reforming Economy*. New Delhi, Oxford University Press.
- Rioja, F. and Valev, N. (2004). Finance and sources of growth at various stages of economic development. *Economic Inquiry*, 42, 127-140.
- Robinson, J. (1952). *The Rate of Interest and Other Essays*. London, Macmillan.
- Rodrik, D. and Subramanian, A. (2005). From “Hindu Growth” to productivity surge: The mystery of the Indian growth transition. *IMF Staff Papers*, 52, 193-228.
- Roubini, N. and Sala-i-Martin, X. (1992). Financial repression and economic growth. *Journal of Development Economics*, 39, 5-30.
- Rousseau, P.L. and Vuthipadadorn, D. (2005). Finance, investment, and growth: Time series evidence from 10 Asian economies. *Journal of Macroeconomics* 27, 87-106
- Said, S.E. and Dickey, D.A. (1984). Testing for unit roots in autoregressive moving average models of unknown order. *Biometrika* 71, 599-607.
- Santos Silva, J. M. C. and Cardoso, F. N. (2001). The Chow-Lin method using dynamic models. *Economic Modelling* 18, 269-280.
- Schumpeter, J.A. (1911). *The Theory of Economic Development*. Oxford, Oxford University Press.
- Shaw, E. (1973). *Financial Deepening in Economic Development*. London, Oxford University Press.
- Singh, T. (2008). Financial development and economic growth nexus: A time-series evidence from India. *Applied Economics*, 2008, 40, 1615-1627.
- Srinivasan, T.N., Rodrik, D. and Subramanian, A. (2005). Comments on from “Hindu Growth” to productivity surge: The mystery of the Indian growth transition. *IMF Staff Papers* 52, 229-236.

- Stiglitz, J.E. (1996). Some lessons from the East Asian miracle. *The World Bank Research Observer* 11, No. 2, 151-171.
- Stiglitz, J.E. and Weiss, A. (1981). Credit rationing in markets with imperfect information. *American Economic Review* 71, 392-410.
- Taylor, L. (1983). *Structuralist Macroeconomics: Applicable Models for the Third World*. New York, Basic Books.
- Thirlwall, A.P. (2003). *Growth and Development: With Special Reference to Developing Economies, Seventh Edition*. New York, Palgrave Macmillan.
- Tornell, A., Westermann, F. and Martínez, L. (2004). The positive link between financial liberalization, growth and crises. *CESifo Working Paper Series*, No. 1164.
- Van Wijnbergen, S. (1983). Interest rate management in developing countries: Theory and simulation results for Korea. *World Bank Staff Working Papers*, the World Bank.
- Verma, R. and Wilson, E.J. (2005). A multivariate analysis of savings, investment and growth in India. *Faculty of Commerce-Economics Working Papers*, University of Wollongong.
- Wallack, J. (2003). Structural breaks in Indian macroeconomic data. *Economic and Political Economy*, October 11, 4312-4315
- Weller, C.E. (2001). Financial crises after financial liberalization: Exceptional circumstances or structural weakness? *Zentrum für Europäische Integrationsforschung Working Paper*.
- World Bank (1989). *World Development Report 1989: Finance and Development*. Washington, D. C., the World Bank.
- World Bank (1993). *The East Asian Miracle: Economic Growth and Public Policy*. New York, Oxford University Press.
- World Bank (1998). *East Asia: The Road to Recovery*. Washington, D. C., the World Bank.
- Wuensch, K.L. (2005). *Principal Components Analysis – SPSS*. Retrieved from <http://core.ecu.edu/psyc/wuenschk/mv/fa/pca-spss.doc>
- Yang , Y.Y. and Yi, M.H. (2008). Does financial development cause economic growth?: Implication for policy in Korea. *Journal of Policy Modeling* 30, 827–840.
- Zivot, E. and Andrews, D.W.K. (1992). Further evidence on the great crash, the oil-price, and the unit root hypothesis. *Journal of Business and Economic Statistics* 10, 251-270.